

NpToNmxp

Version 2.0 I

User Guide

Nanometrics Inc.
Kanata, Ontario
Canada

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NpToNmXP Version 2.01 User Guide

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Nanometrics, Inc.
250 Herzberg Road
Kanata, Ontario, Canada K2K 2A1
Tel (613)592-6776
Fax (613)592-5929
Email info@nanometrics.ca
www.nanometrics.ca

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NpToNmxp v2.01

1 About NpToNmxp

NpToNmxp receives NP data packets from a Taurus, translates them into Nmxp packets, and sends them on to NaqsServer. NpToNmxp also receives retransmission requests from NaqsServer, translates them into NP packets, and sends them to the Taurus.

NpToNmxp does not transmit SOH or log packets. You can download SOH and log information directly from the Taurus to .csv files (see the Taurus user guide).

When NpToNmxp is running with NaqsServer, the data may be viewed in Waveform. If DataServer is running, the data may be viewed in Atlas.

2 Installing NpToNmxp

These instructions refer to a typical installation. For a typical installation, you would install NpToNmxp on the Naqs server, where the current directory would be the user directory (\nmx\user or /nmx/user).

On Windows:

- ▶ Copy the files NpToNmxp.jar and NpToNmxp.bat to the \nmx\bin directory.

On Linux:

1. Copy the files NpToNmxp.jar and nptonmxpconsole to the /nmx/bin directory.
2. Make the file nptonmxpconsole executable: Change to the /nmx/bin directory and then enter the command `chmod +x nptonmxpconsole`

3 Configuring your system to use NpToNmxp

Configure NaqsServer and the Taurus to use NpToNmxp.



Note To use NpToNmxp with an older version of NaqsServer (versions lower than 1.90) or DataServer (versions lower than 1.05.01):

- 1) The command line should have Orion specified as an argument.
- 2) The Naqs.stn file should have Model = Orion in the [InstrumentPrototype] section.

3.1 Add the Taurus to NaqsServer

NaqsServer Version 1.90 recognizes Taurus as an instrument type. For versions lower than 1.90, use Orion as the instrument name.

3.1.1 For NaqsServer Version 1.90 or higher

1. Add a Taurus [InstrumentPrototype] section to your Naqs.stn file. For example:

```
[ InstrumentPrototype ]
TypeName = Taurus           // prototype name - may be same as model
Model = Taurus              // instrument type
MemoryKB = 512              // instrument ReTx buffer size
SohBundlesPerPacket = 27    // bundles per soh packet
RequestInterval = 60        // interval between retx request messages
SohChannelName = SOH        // extension for soh file (NUL if none)
SohBufferSize = 1          // file size in MB
SohBufferPath = ringbuff    // where files are located
InetHostName = Dynamic      // return IP address for instrument
InetPort = 32000            // return IP port for instrument
```

► See Section 3.2 on page 4 for information on determining a value for *MemoryKB*.

► *InetHostName* must be set to *Dynamic*.

2. Add three [ChannelPrototype] sections for the Taurus channels. For example:

```
[ ChannelPrototype ]
TypeName = BHZ-3 // label for this type
Name = BHZ       // channel name
Component = 1    // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90     // azimuth in degrees clockwise from North
Dip = 0          // dip in degrees (positive down)
Depth = 0        // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
                        // Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file

[ ChannelPrototype ]
TypeName = BHN-3 // label for this type
Name = BHN       // channel name
Component = 2    // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90     // azimuth in degrees clockwise from North
Dip = 0          // dip in degrees (positive down)
Depth = 0        // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
                        // Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file
```

```
[ ChannelPrototype ]
TypeName = BHE-3 // label for this type
Name = BHE      // channel name
Component = 3 // digitizer component (refers to current instrument)
Sensor = Trillium // pointer to predefined [Sensor] characteristics
Azimuth = 90    // azimuth in degrees clockwise from North
Dip = 0         // dip in degrees (positive down)
Depth = 0       // has to be defined for each channel
BundlesPerPacket = 27 // bundles per data packet, always 27 for
                        // Taurus
RingBufferSize = 10 // file size in MB
RingBufferPath = ringbuff // where files are located
ResponseFile = none // name of SEED response file
```

3. Add the station, and add each Taurus as an instrument with associated channels.

For example:

```
[ Station ]
Name = STN03
Description = Top of hill, new vault
Latitude = 47.48
Longitude = 16.36
Elevation = 1022.3

// These are the instruments associated with the preceding station

[ Instrument ] // instance of an instrument
Prototype = Taurus // instrument type
SerialNumber = nnnn // serial number - mandatory

// These are the channels associated with the preceding instrument

[ Channel ] // instance of a channel
Prototype = BHZ-3 // use settings from this prototype

[ Channel ] // instance of a channel
Prototype = BHN-3 // use settings from this prototype

[ Channel ] // instance of a channel
Prototype = BHE-3 // use settings from this prototype

▶ Set the value for SerialNumber to the serial number of your Taurus unit.
```

3.1.2 For NaqsServer versions lower than Version 1.90

- ▶ Add Naqs.stn file sections as described in Section 3.1.1, with these modifications (use the applicable Taurus settings for the remaining parameters):
 - a) In the [InstrumentPrototype] section, set *TypeName* to Orion and set *Model* to Orion.
 - b) In the [Instrument] section for each Taurus, set *Prototype* to Orion.
- ▶ In a command line startup of NpToNmxp, specify Orion as an argument.
If an alternative port number is used (for example, 32040) the arguments Orion and *port number* may be in any order.

In the Naqs logs, the instrument entries will be indicated as Orion with the Taurus serial number; for example, ORN014.

3.2 Set the *MemoryKB* parameter in the `Naqs.stn` file

The `Naqs.stn` file [`InstrumentPrototype`] section has a *MemoryKB* parameter, which is a setting for the retransmit buffer size on a remote instrument. Setting *MemoryKB* requires special consideration when streaming NP packets from a Taurus, as this parameter was designed for instruments with relatively small ringbuffers (typically up to 13MB) compared to Taurus storage capacity (up to 37GB).

You may set *MemoryKB* to any positive integer value (use 0 if retransmit request is disabled), although Naqs will impose a limit based on a maximum allowable backlog. The number of packets allowed as a backlog is approximately $MemoryKB * 2$.

Setting *MemoryKB* to too small a value will cause Naqs to abandon recent missing packets (for example, a setting of 512 would limit the interval over which packets can be retransmitted to around 1100 packets, or approximately 15 minutes of data at 100sps). Setting it to a very large value based on Taurus storage capacity, and considering that retransmitted packets have a lower priority than primary streamed packets, may result in it taking an extremely long time to get the backlog of data. In this case, it would make more sense to retrieve old data directly off the recording medium.

Instead, you may adjust the value based on how much data you want to retrieve from the Taurus Store to the Naqs ringbuffers after startup. For example, to limit the number of past packets requested before startup, initially set *MemoryKB* to a small value until the Naqs ringbuffers fill up, then set *MemoryKB* to a higher value to retrieve missing packets.

- ▶ If you change any settings in either the `Naqs.ini` or the `Naqs.stn` file, you must save the file and then restart both NaqsServer and NpToNmxp for the changes to take effect.

3.3 Configure the Taurus to stream NP packets to Naqs

1. Log in as tech or central.
2. Go to the Advanced Configuration > Communications > Data Streaming page.
3. Enable Stream NP Packets: Select the checkbox ☒.
4. Type in the Naqs server IP address (IP Address).
If you are using multicast, type in the multicast group address specified in the `Naqs.ini` file (see also Section 3.4).
5. If required, type in the NpToNmxp listening port (Port #). The default NpToNmxp listening port is 32004; typically this does not need to be changed (see also Section 3.5).
6. Save the configuration change:
 - a) Click **Apply**.
 - b) When the changes have been applied successfully, click **Commit**.

3.4 Configure NpToNmxp for multicast

NpToNmxp can transmit to a multicast group as defined in the `Naqs.ini` file [`NetworkInterface`] section. Only the first `MulticastGroup` address listed in the

Naqs.ini file is used by NpToNmxp Version 2.01. To use multicast, edit the Naqs.ini file and Taurus settings as appropriate.

1. Edit the Naqs.ini file [NetworkInterface] section to use a valid multicast address. For example:

```
[ NetworkInterface ]
Port = 32000          // UDP port for incoming NMX data (usually 32000)
SendDelay = 250      // milliseconds to delay after each send
RetxRequest = Enabled // Naqs will send retransmit requests
MulticastGroup = 229.1.2.1 // multicast group
```
2. When configuring the Taurus to Stream NP Packets (see Section 3.3), set the value for IP address to the [NetworkInterface] *MulticastGroup* address.

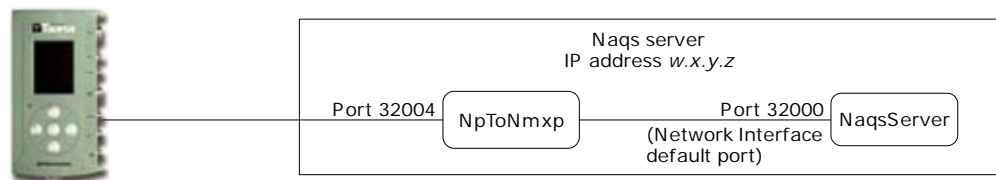
3.5 Change the NpToNmxp listening port

The NpToNmxp listening port is 32004 by default, on the IP address shared with Naqs (for example, Figure 3-1). Typically you would not need to change this setting.

- ▶ If you do change the listening port number, ensure that you use a different port than that set in the Naqs.ini file [NetworkInterface] section *Port* parameter. Otherwise Naqs will receive Taurus packets, which it will not recognise, as well as packets from NpToNmxp.
- ▶ To change the listening port, set the *port number* as an argument on the command line on startup (for example, on Windows NpToNmxp 32040) or in the shortcut (for example, on Windows, java -cp c:\nmx\bin\NpToNmxp.jar ca.nanometrics.npToNmxp.NpToNmxp 32040).

If the instrument type is set to Orion (required for older versions of NaqsServer), the arguments Orion and *port number* may be in any order.

Figure 3-1 Default port assignments



4 Running NpToNmxp

4.1 Requirements

- ♦ Java 2 Run-time Environment (J2RE) version 1.4.2_0x or higher.
- ♦ A Naqs.ini file is in the current directory.
- ♦ The path to the executable (npTonmxp.bat or npTonmxpconsole) must be specified by an absolute or relative path on the command line or through the use of the PATH environment variable.
- ♦ The LogPath directory specified in the Naqs.ini file must be writeable.

4.2 Start NpToNmxp

NpToNmxp will use the `Naqs.ini` file that is in the current directory.



Notes:

- 1) If the logs are set to `verbose` in the `Naqs.ini` file, on startup you may see a series of messages that will be displayed until the first valid oldest sequence number (OSN) is received. For example:

```
V 2005-01-26 14:03:37  NpClient.....(5) Oldest
SeqNumber info not received yet.  Caching packet: 55228:
Taurus...
```
- 2) If you have started NpToNmxp more than once within a short time, then the retransmit queue of the Taurus (running firmware version 2.x) may be too full to transmit OSN data immediately. If more than 5 minutes has elapsed and the NpToNmxp console log is displaying messages such as "I 2006-01-03 21:52:23 NpClient\$SourceD(243) Cached 4700 packets from taurus_0483 while waiting for OSN data", then you may wish to clear the retransmit queue: In the Taurus Advanced Configuration > Communications > Data Streaming page, disable Stream NP Packets ☐, **Apply** the setting, enable Stream NP Packets ☒, and **Apply** again. NaqsServer will rerequest any missing data again after successful restart of NpToNmxp.

4.2.1 Start NpToNmxp on Windows

You can start NpToNmxp manually or set it to start automatically with NmxWatchdog.

To start NpToNmxp manually:

1. Start NaqsServer if it is not already running.
2. Open a new command window.
3. At the command line enter `nptonmxp`. (Optionally, use an alternative port number; see Section 3.5 on page 5.)
 - If you are using NaqsServer Version 1.8x, enter `Orion` as the instrument type as a parameter on startup. For example:

```
> nptonmxp orion [port number]
```

To set NpToNmxp to start automatically with NmxWatchdog:

1. Add an entry to your `watchdog.ini` file; this example uses the typical locations for program and current (working) directories:

```
[ WatchEntry n ]
ProgramTitle = "NpToNmxp"
ProgramPathname = "java -Xrs -cp c:\nmx\bin\NpToNmxp.jar
                  ca.nanometrics.npToNmxp.NpToNmxp [port] [orion]"
WorkingDirectory = "c:\nmx\user"
ExitAction = Restart
PingsSemaphore = FALSE
StartDelay = 6s
```

 - Optionally, you may include in the *ProgramPathname* the port number you used when configuring your Taurus (Section 3.3). The port default is 32004.
 - If you are using an older version of NaqsServer, include the instrument name `Orion` as an argument in the *ProgramPathname* (see Section 3.1.2).

2. Edit the [WatchTiming] section *NumberEntries* parameter to include the new [WatchEntry *n*] section.
3. Restart NmxWatchdog.

4.2.2 Start NpToNmxp on Linux

You can start NpToNmxp manually, or use scripts to start it automatically.

To start NpToNmxp manually:

1. Start NaqsServer if it is not already running.
2. Open a new terminal window.
3. At the command line enter `nptonmxpconsole`. (Optionally, use an alternative port number; see Section 3.5 on page 5.)
 - ▶ If you are using NaqsServer Version 1.8x, enter `Orion` as the instrument type as a parameter on startup. For example:


```
> nptonmxpconsole orion [port number]
```

4.3 Stop NpToNmxp

- ▶ In the command window enter either `exit` or `quit`.

5 Viewing the operation log

NpToNmxp writes operation log files (`NpToNmxp_yyyymmdd.log`) to the directory specified in the `Naqs.ini` file [NaqsLog] *LogPath* parameter. The log verbosity is as specified in the *Naqs Verbosity* parameter.

